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ABSTRACT

To complete in the increasingly competitive marketplace, public universities need to become more flexible and more focused in reactions to expanding and changing demands. As the case study of five European universities by B. Clark (1998) demonstrates, an entrepreneurial response on the part of universities results in diversified income, a decreased dependence on the government, new approaches that provide a different institutional character, and a more focused, confident, and resilient university. The tendencies evidently in and methods and intricacies of this response are discussed in this essay. As public universities seek new administrative forms and strategies to motivate the academic heartland to acquire the entrepreneurial culture that stimulates innovation, self-reliance, and pursuit of discretionary funds, hard work is needed. Doing nothing poses very large risks. The process of transformation in a university is an immense field of creativity and opportunities, but it is a necessity. (Contains 27 references.) (SLD)

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The Entrepreneurial Response of Public Universities

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Introduction

Globalization, the information revolution, diversification of training needs and demand patterns in the labor markets, as well as new forms of competition among educational institutions discontinued the traditional life of public universities by enforcing on them serious changes in structure and modes of operation (Clark, 1998, 2001; Etzkowitz et al., 2000; Salmi, 2001; Slaughter & Leslie, 1997). To compete in the increasingly competitive markets, public universities "need to become quicker, more flexible, and especially more focused in reactions to expanding and changing demands" (Clark, 1998, p. 5). Hence, universities review their steering mechanisms, funding approaches, developmental structures, academic relationships and attitudinal patterns. As Clark's (1998) case studies of five European universities demonstrate, the entrepreneurial response results in a diversified income, a decreased dependence on the government, new modes of thought and beliefs that provide a different institutional character: a more focused, confident and resilient public institution. Tendencies, methods and intricacies of this response are discussed in this essay.

The Context of Change

Clark (1998) opens his groundbreaking work on entrepreneurial universities with a very despondent statement about a "disquieting turmoil that has no end in sight" (p. xiii). Slaughter and Leslie (1997) see the basis for the disquieting situation in the:

> growth of global markets, the development of national policies that target faculty-applied research, the decline of the block grant (undesignated funds that accrue to universities, often according to formulas) as a vehicle for state support for higher education. (p. 11)

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All these factors contribute to a radical change in higher education resulting in "the concomitant increase in faculty engagement with the market"(p. 11).

Slaughter and Leslie (1997) further note that globalization had the following "far-reaching implications" for higher education: (1) "the constriction of moneys available for discretionary activities;" (2) "the growing centrality of technoscience and fields closely involved with markets, particularly international markets;" (3) "the tightening relationships between multinational corporations and state agencies concerned with product development and innovation;" and (4) "the increased focus of multinationals and established industrial countries on global intellectual property strategies" (p. 37).

Concerned with the ability of their industry to compete globally, national governments evidently push public universities to develop infrastructure that would strengthen the national industrial performance. Innovative research and training are seen as driving components of an increase in productivity (Etzkowitz et al., 2000). Through various policy documents and appropriate budget relocations, governments increasingly emphasize that they are willing to invest "less money for social welfare and education functions and more money for building corporate competitiveness" (Slaughter & Leslie, 1997, p. 14). Consequently:

> National policy makers in advanced industrialized countries are moving discretionary research and training moneys into programs that complement areas of innovation in multinational corporations, such as high technology manufacturing, development of intellectual property, and producer services, international commodity exchanges, international monetary exchanges, and international security dealing. (p. 14)

As a result, education is "increasingly viewed as a subsector of economic policy" (Neave, 1988, p. 274). Universities are increasingly compared with businesses and labeled as knowledge factories (Daumard, 2001).

Subotzky (1999) claims that:

> Globalization has significantly altered patterns of research and development, as well as production. In turn, this has generated new organizational forms and practices in higher education knowledge production. As a result, a strong trend towards the 'entrepreneurial'university has emerged, characterized by increasingly market-like behavior and governance. (p. 401)

Slaughter and Leslie (1997) define market-like behaviors as:

> institutional and faculty competition for moneys, whether these are from external grants and contracts, endowment funds, university-industry partnerships, institutional investment in professors' spin-off companies, or student tuition and fees. (p. 11)

By responding to the government's call to "enter the marketplace and raise more of [their] own money" (Slaughter & Leslie, 1997, p. 108), universities experiment with technology licensing, technology parks, joint ventures, equity sharing through newly-established:

> centres of excellence, consortia with industry, and various university-industry partnerships [that] most often provide multiyear government and corporate funding for commercially geared R & D. (p. 56)

The entrepreneurship champions explain this response to opportunities by raising the following rhetorical question: "Firms cannot afford to neglect their markets, can universities?" (Daumard, 2001, p. 70).

The external pressures are accompanied by exacerbating internal problems that often impair public universities'ability to make an adequate response. Clark (1998) argues that "demands on universities outrun their capacities to respond" (p. 129). The diverse and "virtually endless" requirements of labor markets demand that universities enhance their service-oriented character. Universities find that they are left with no alternative but to do more at a lower unit cost. Meanwhile, the increase in knowledge production requires more funding and personnel, space, etc. "Knowledge outruns resources" and no institution can "control knowledge growth" (pp. 129–131). Pressed by the impotence,

organizations recognize they have to do something since "organizational sleepiness becomes more costly" (Clark, 2001, p. 20).

Hence, some public universities, as exemplified by the experience of five European universities — Warwick, Twente, Joensuu, Strathclyde and Chalmers — have embraced entrepreneurship as an opportunity to escape from an ominous situation (Clark, 1998). Slaughter and Leslie (1997) define such a response as "academic capitalism," which is rewarding, but "full of contradictions, in which faculty and professional staff expend their human capital stocks increasingly in competitive situations," while employed by the public sector and becoming "increasingly autonomous from it" (p. 9). The "state-subsidized" entrepreneurs emerge as a class of academic capitalists. According to Subotzky (1999) a new type of university is emerging which is:

> characterized by closer university-business partnerships, by greater faculty responsibility for accessing external sources of funding, and by a managerial ethos in institutional governance, leadership and planning. It thus entails increasing market-like behavior among both management and faculty. These developments have disrupted the traditional disciplinary-based organizational features and functions of higher education. (p. 402)

The Legacy of Traditional Universities

Not all universities view entrepreneurship as an opportunity. Many still see it as a threat. A better understanding of the legacy that limits the entrepreneurial response is important.

First of all, it's not very clear to what extent traditional universities are aware of globalization and how the latter shapes national higher education. As Slaughter and Leslie (1997) remark:

> for the most part [universities don't] view these changes as creating new opportunities. Instead, they [prefer] the former binary system, which had accorded them markers of status and prestige: exclusive designation as universities and guaranteed government funding for faculty's curiosity-driven research. (p. 143)

Government cutbacks are viewed as temporary deviations. Traditional universities still expect that there will be a return to the former status quo — indeed, that governments will realize their error and pour an increasing amount of funds into research and university education on an expanding scale.

Secondly, Clark (1998) claims that the steering capacity of traditional universities is usually weak as a result of a lack of "a clear view of what they [want] to do" and "the necessary structure to effect adequate rates of change and the will to produce it" (p. 67). The decision-making processes are slow and ineffective.

> Central direction ranges between soft and soggy. Elaborated collegial authority leads to sluggish decision-making: 50 to 100 and more central committees have the power to study, delay and veto. The senate becomes more of a bottleneck than the administration. Evermore complex and specialized elaborated basic units — faculties, schools, and departments — tend to become separate entities with individual privileges, shaping the university into a federation in which major and minor parts barely relate to one another. Even when new departments can be added to underpin substantive growth and program changes, the extreme difficulty of terminating established academic tribes or recombining their territories insures that rigidity will dominate. Resources go to maintenance rather than to the inducement and support of change. (p. 131)

As Davies (2001) remarks, "there is normally a low corporate/central identity and presence, with a tendency to be non-interventionist in most areas of university life" (pp. 26–27). What unites these "organized anarchies" is only "common concerns over parking space and central heating" (Perlman et al., 1988, p. 8).

Thirdly, "blue-sky research" still drives the mentality of traditional universities, with a field of knowledge unequivocally seen as full of unpredictable discoveries and unexpected results. McInnis (2001) points out that academics are:

> primarily concerned with satisfying intrinsic motives. That is, they are driven by the need to satisfy their curiosity in the subject matter, and they are typically less motivated by the perception

> that the work will reap rewards outside the work itself. (p. 47)

Faculty at traditional universities are more focused on "getting more income, rather than on wealth generation" (Spender, 2000). Faculty members "tend to be frustrated and focused on red tape and procedure, not on performance and results" (Perlman et al., 1988, p. 9). "This leads to a culture of complaint, and not the recognition of opportunity" (Spender, 2000).

Davies (2001) identifies cultural patterns at traditional universities as:

> highly individualistic and very respectful of individual autonomy, which often means isolation, defensiveness and a denial of the need for overarching strategies either at faculty or university levels. Response to external opportunities will tend to be individualistic, and the norms of the academic market place will be distrusted. The culture is predominantly kind, non-threatening and safe, and personal or group accountability tends to be low in terms of internal processes. There may be reluctance to confront problems — often interpreted mistakenly as a sort of consensus, and regulations dominate nonacademic matters, especially in systems where the state administrative ethos is strong. Major policy decisions will tend to be very slow, given the checks and balances of various kinds. The dominant norms would be those of the collegium and bureaucracy. (pp. 26–27)

Finally, challenged with requirements to develop "flexibility, adaptability, speed, or incentives for innovation that are critical for effectively carrying out" the new mission (Morris & Jones, 1999), traditional universities see "entrepreneurship" as "a negative term," "all the more so after they have seen hard managerialism in action. They may go on thinking of entrepreneurship as raw individualistic striving that is socially divisive" (Clark, 1998, p. 148).

No matter how long the strongholds of a traditional university may last, entrepreneurship and innovation in public universities are unavoidable as much as the circumstances, determined by the context of change, are unavoidable (Clark, 1998; Slaughter & Leslie, 1997). As Clark Kerr (cited in Clark, 1998) notes:

> for the first time, a really international world of learning, highly competitive, is emerging. If you want to get in that orbit, you have to do so on merit. You cannot rely on politics or anything else. You have to give a good deal of autonomy to institutions for them to be dynamic and to move fast in international competition. You have to develop entrepreneurial leadership to go along with institutional autonomy. (p. 136)

Transformation Pathways

In his studies of entrepreneurial universities in Western Europe, Clark (1998) identified five successful stories of public universities' entrepreneurial response. Warwick and Strathclyde in the U.K., Chalmers in Sweden, Twente in the Netherlands, and Joensuu in Finland — all demonstrated "special activity and energy" in initiating and pursuing innovative practices in an environment of doubt and risk to turn "problems into opportunities" (p. 58). For all of them, "significant innovation in the character [meant] that some core tasks and some deep structures [were] altered to the point where the long-term course of the organization [was] changed" (p. 8). All of them viewed:

> attack [as a] best form of defense, or in university language, that optimism, some risk taking and a willingness to attempt new things represent a better policy than caution, cut-backs and academic conservatism. (p. 38)

Having analyzed the model universities' transformation pathways, Clark (1998) benchmarks five major components of a successful strategy for building a public entrepreneurial university. Those are "a strengthened steering core; an expanded developmental periphery; a diversified funding base; a stimulated academic heartland, and an integrated entrepreneurial culture" (p. 5). The following accounts discuss the entrepreneurial approach in more detail.

The strengthened steering core

To be able to initiate and implement the process of change, the model universities sought to build a steering capacity beyond the traditional mode.

In most of the universities the process was initiated by a charismatic, strong-minded and visionary vice-chancellor who re-organized the institutional structures to weaken the role of endless university committees and to strengthen the role of managerial cores. The vice-chancellor sought out and brought to power "doers" — strong characters like him, to lead the universities'departments. The vice-chancellor lobbied governments and businesses for funds, and served as an ambassador to the public at large to promote the image of his university as a useful and meaningful institution. Last but not least, the vice-chancellor and his team sought the involvement of central faculty to avoid "what the academic staff would otherwise see as hard managerialism, too much top-down command" (Clark, 1998, p. 137).

Transformation, however, does not happen "because a solitary entrepreneur captures power and runs everything from the top-down: such cases are exceptions to the rule. Universities are too bottom-heavy, too resistant from the bottom-up, for tycoons to dominate very long" (p. 4). In other words:

> a highly personal form of rectorial leadership can generally serve only for a time as an agency of change... Chair-based professors expect to exercise strong authority: their historic senate remains in the picture. As academics uncomfortable with dictates from above push back, more collegial forms of leadership reassert themselves. (p. 90)

The only significant part of the collegiality issue is how to make collegiality work for the implementation of change rather than for the resistance to change. According to Clark (2001):

> There is always a dialectic underway between central persons and groups representing the interests of the total university versus faculty and departmental individuals and groups responsible for the welfare of a part of the whole. (p. 14)

He also warns that the process is "a multitude of subtle relationships" (p. 15). In the university's highly political environment, it is important that organizational innovation is not seen by the central administration and divisional administration "in terms of gaining or losing control" (Daumar, 2001, p. 73).

Structural changes that increase the velocity and effectiveness of decision-making are required. Warwick, for example, chose to avoid faculties as intermediaries between the centre and departments. Instead the "flat structure" was established, in which "chairs relate directly to the vice-chancellor." Clark (1998) points out that the university downplayed "a single apex committee" by establishing:

> a set of interrelated central committees, knitted together by overlapping membership, consisting of a small cadre of senior administrators together with a small group of professors elected by colleagues to play central roles. This web of interlocked central committees has become the heart of Warwick's capacity to steer itself. (p. 21)

In another example (Clark, 1998), Strathclyde strengthened its steering core by empowering the University Management Group (UMG) to act beyond the traditional senate and faculty committees' responsibilities.

> The academic senate became recognized as strong on discussion of issues but weak on action. As the central component of a strengthened administrative core, one that had assumed much operational authority, UMG became the action group that could 'get-up-and-go'... (pp. 69–70)

In the UMG framework, deans, as budget-holders, had to "handle, issue by issue, the clash between managerial and academic values and the opposition between the interests of the centre and the interests of the parts." The system proved to be effective because, as the vice-chancellor said, "at the end of the day the five deans [were] pulling in the same direction" (pp. 69–70).

Structural improvements should be also sought at lower levels. Opportunities for changes in administrative approaches at the level of the university units, in particular at research centres, were also promoted and implemented at the model universities. Thus, Chalmer's research centres took a new approach by establishing boards of directors

including representatives of government and industry that would "formulate the strategically important research programmes [together], assuming collective responsibility for financing and execution" (Clark, 1998, p. 92).

Structural changes must be followed by budgetary innovations. To empower divisions (schools, departments, centres and institutes) to take responsibility for revenue generation, the university must introduce new budgetary methods. For example, Twente and Joensuu used a decentralized approach known as responsibility-centre budgeting/responsibility-centre management (Clark, 1998; see also Lang, 2001).

> Rather than specify internal allocations within numerous large and small budget categories, an overall sum of money would be granted to basic units such as faculties, departments and research centres. (Clark, 1998, p. 45)

Usually, the new budgeting system sends a strong message to the university divisions that "inattentive administration, or unwillingness to seek income, would become self-destructive behavior" (Clark, 1998, p. 56). Twente applied "full-cost accounting in which virtually all service/support costs, such as use of office space and of the computer center, were charged to the basic units" (p. 45). In general, such budgetary changes may be important since they "help fix attention within basic units on cost control and on enhancing income from a number of sources, widening the financial base beyond [the governmental] core support" (p. 45).

While Twente divisions accepted the responsibilities for managing their own budgets as an opportunity from the start, Finland's Joensuu treated the innovation as a threat in the beginning. The new budgetary approach at Joensuu required a series of incremental steps. The Ministry of Education was persuaded to support this budgetary experiment and to designate a Ministry official to work at Joensuu on the budgetary reform. The governmental official's participation in the reform had a double value: it "helped to convince central ministers to approve the experiment" and also established some confidence among the faculty that this approach is viable (Clark, 1998, p. 108).

A proper balance in financial relations between the administrative centre and the departments, although hard to maintain, should be constantly sought after. With some departments, such as business and engineering schools, receiving generous income and others barely surviving, the university administration has no alternative but to "divide and rule." When the general institutional interest is to be asserted in pursuit of opportunities, the central administration needs to prepare a well-calculated plan that promises serious payback. In Warwick's case, a development office was established by means of a centralized command that tightened the already tight departmental budgets, but in the end brought a steady source of alternative revenue through fund-raising efforts. At Twente, the administrative centre imposed a 'tax,' as a "charge for central services" by "clawing back over 30%" of the profit accrued at the earning departments (Clark, 1998, p. 46). In both cases, when the risky investments achieved the expected results, the departments developed more trust and a willingness to share their resources with the centre to experiment with new ways of investment.

Warwick had to assert that "decisions about how much money can be made available are made first, followed by hard decisions on what to develop and what to let go on the academic side" (Clark, 1998, p. 23). However, the decision making was not a top-down process. The centre invested time and effort to place ownership with faculty. A special committee was chaired by a faculty member and included three faculty members from the sciences, social sciences and humanities, all of whom were elected on a rotating basis. The system allowed to "bring traditional faculty points of view into central circles that otherwise might be dominated by what faculty would view as the managerial outlook of administrative officers" (p. 23).

Thus, changes in both the organizational structure and budgeting should be implemented in order to strengthen the university's steering capacity. Clark's model universities all exhibited:

> a greater systematic capacity to steer themselves. That ability was not based on any one particular form. It could be relatively centralized or decentralized, generally appearing in practice as a locally unique combination of the two – a centralized decentralization. (Clark, 1998, p. 137)

The expanded developmental periphery

The second strategic component refers to the expansion of periphery, which grows as a result of:

> industry related research and development, consultancy, technology transfer, continuing education and lifelong learning in various forms, a considerable influx of non national students to the campuses, substantial overseas delivery through offshore campuses, franchise arrangements, and e-learning, and the commercialization of physical campus assets like halls of residence and sports facilities for external use. (Davies, 2001, p. 25)

As Davies (2001) notes, the growth starts in "localized pockets," which usually bulge in business schools, engineering and medical departments. Clark (1998) states:

> In one form these units are professional outreach offices that work on knowledge transfer, industrial contact, intellectual property development, continuing education, fundraising, and even alumni affairs. In another larger, and more basic, form they are interdisciplinary project-oriented research centers that grow up alongside departments as a second major way to group academic work...Departments alone cannot do all the things that universities now need to do. (p. 6)

Research centres:

> bring into the university the project orientation of outsiders who are attempting to solve serious practical problems critical in economic and social development. They have certain flexibility in that they are relatively easy to initiate and to disband. Constructed to cross old boundaries, the centres mediate between departments and the outside world. (p. 6)

For example, the Warwick Manufacturing Group (WMG) sprang from the engineering division where a charismatic scientist had the vision and the will to bring together the existing entrepreneurial resources. The WMG built strong relations with weighty British corporations, such as Rolls-Royce and British Aerospace, created overseas "satellite operations" and attracted a multitude of foreign students. The Group's impressive achievement was recognized by the influential international press. The Group was allowed to go "off-scale in much of its salary-and-career structure in order to attract unusual talent in competition with the lures of industry" (Clark, 1998, p. 27). The WMG practice was further accompanied by similar growth of the Business School, development of a successful Warwick Science Park and development of an impressive conference complex, which had no parallels "in the huge network of several hundred American universities" (p. 19).

Similarly, Strathclyde's Institute for Drug Research (SIDR) built relationships with pharmaceuticals "with a clear agenda of generating intellectual property licensable to industry" (Clark, 1998, p. 73). "The institute could claim in the mid-1990s over four million dollars per year of royalty income from drug-related work." (p. 73). The Institute developed an international network by expanding its activities to partner suppliers in Africa, South America, Asia, Australia and Europe. Through acquisition agreements that give 60% of related income to the home country, Strathclyde developed worldwide access to a "library of plants." The materials examined at the SIDR could also be sold to others to analyze: "selling agreements" became especially numerous with Japanese pharmaceutical houses (p. 74).

At Twente, the growth of the developmental periphery was designed as a step-by-step approach. The "prospective entrepreneurs who want[ed] to start their business from an entrepreneurial university" would start with a

special program called TOP(Temporary Entrepreneurial Placements) (Clark, 1998, p. 47). Located at the Office of Transfer, Research and Development, the program offered to the interested faculty and graduate students:

> an interest-free loan, office space and connection to a university research group, advice and training in preparing a business plan and working out management, marketing, and financing strategies, and even in time a faculty mentor and courses on how to become an entrepreneur. (p. 48)

In a matter of time, successful initiatives moved from the program premises to the Business and Technology Centre, supported by local companies and government. Later, the mature company would depart to the Twente Business and Science Park, an independent entity adjacent to the university. (Clark, 1998). This step-by-step approach instilled confidence in young entrepreneurs, and increased the chances of the spin-offs' survival.

It is notable that Twente encouraged students to actively develop their own business while completing their studies. "Some Twente undergraduates, while still students, set up their own small firms or consulting services to earn money and gain experience in small-group enterprise" (Clark, 1998, p. 57).

Twente also tried to sell fledgling ideas to well-established firms. In cases when young entrepreneurs developed an idea but were less interested in the day-to-day operation of the business, Twente's Temporary Support Spin-Offs Program extended "the spin-off idea from young entrepreneurs to more experienced people already employed in firms" (Clark, 1998, p. 49). Although this approach "has proven to be a lot of work for small results," it strengthened the local network between the university spin-off companies and established businesses (p. 49).

In all of the above-mentioned cases, it is evident that research centres/groups were the focal point of developmental activity. They had the courage and creativity to experiment in lieu of opportunities, regardless of doubts and risks involved. Their successes tended to multiply as one division picked up on the best practices of another.

Although in most cases the periphery initially develops around the hard sciences, it expands to the realm of the humanities when the first achievements and success stories become evident. Warwick's periphery embraced social sciences and arts through research centers in "macroeconomic modeling, comparative labor studies, ethnic relations, democratization, women and gender" (Clark, 1998, p. 28). One of Warwick's "happy opportunist[s]" experimented with theatrical performances to earn an income through international festivals, "raising money as he goes, while training "cultural administrators" in advanced programs in a "research-led department" (p. 28). Twente's Centre for Higher Education Policy Studies (CHEPS) became a "major research house of its kind in the world, combining domestic practical projects with basic research in comparative higher education" and thus gained consulting contracts from the World Bank, UNESCO, and foreign governments (p. 52).

To be innovative, universities sometimes have to "break rules" (Clark, 1998). Twente and Chalmers had to "bypass" a restrictive public law in order to establish structures that would increase their revenue-generating capacity. Twente's "imaginative answer was to establish a sort of private entreprise within the university, which could operate under civic law" (p. 50). Chalmers acquired the status of a foundation to become a quasi-private institution and avoid ministerial control in decisions related to appointing and rewarding personnel and establishing new programs and centres. The new structures often mimicked business in running corporate boards, encouraging spin-offs and competition for internal resources. Such mechanisms allowed for the development of new infrastructures in a more expedient and creative fashion.

To reiterate, each case in which a successful developmental periphery was established demanded creativity and the courage to experiment. The model universities supported and nurtured innovative talent. According to Martin and Austen (2002), such talent would:

> see uncertainty as an opportunity for creative freedom; respond to failure with systematic curiosity, treat opposition as a creative tension that can fuel performance, and treat change as a means to expand knowledge and experience. (p. 10)

A diversified funding base

In entrepreneurial universities, faculty are aware of budget reductions and the need to raise funds from alternative sources. When choosing how to deal with "a fork in the financial road" entrepreneurial universities clearly opt to "actively intervene by deciding to develop additional lines of income from pursued patrons" rather than "passively fall in line and undergo parallel financial increases and decreases — as the government goes" (Clark, 1998, p. 140). For example, "Warwick profited immensely from its early tough-minded recognition that central government in Britain had become an undependable university patron, often a hostile one" (p. 37).

According to Clark (1998), public universities usually have three main income streams: (1) a block grant provided by the government, (2) funds obtained from governmental research councils, and (3) alternative income obtained from industry contracts, foundation grants, fundraising activities, sales and services. Universities:

> set up their efforts to raise money from the second major source, research councils, by more vigorously competing for grants and contracts. They set out to construct a widening and deepening portfolio of third-stream income sources that stretch from industrial firms, local governments, and philanthropic foundations, to royalty income from intellectual property, earned income from campus services, student fees, and alumni fundraising. (p. 6)

It's the third stream of resources which entrepreneurial universities seek out and to which they "actively reach out" (p. 25).

Davies (2001) notes that:

> financial consciousness, the ability of the institution and its members to exploit commercially the opportunities presented, and to generate surpluses, which may be used to invest to further development, or meet deficits incurred by government financial reductions or declining enrolments or other academic business determine the dimensions of university responsiveness. (p. 29)

As soon as alternative revenue increases, the involved research centres and the entire university acquires the discretionary capacity to build their competence. The snowball effect may produce optimistic views of the chosen direction of change. Alternative resources are reported to increase "faculty, unit, and institutional prestige because they were earmarked for research, the function that distinguishes among universities" (Slaughter & Leslie, 1997, p. 137). The need "to maintain research (and other) resources and to maximize prestige," keeps the entrepreneurial faculty committed to the pursuit of alternative resources (Slaughter & Leslie, 1997).

A stimulated academic heartland

Although research centres are the pulse of new developments, traditional academic departments remain at the heart of the academic work. "Whether [the latter] accept or oppose a significant transformation is critical. It is here in the many units of the heartland that promoted changes and innovative steps are most likely to fail" (Clark, 1998, p. 7). It is important for faculty members from traditional departments to participate in the administration of change, to understand the significance of funding from alternative sources and to be flexible in building the developmental infrastructure.

Warwick stimulated its academic heartland by:

> the melding of periphery into the core; the extensive building of research centres under departments; the

> construction of a university-wide graduate school; and the introduction of an imaginative and highly attractive research fellowship scheme that reached across the campus. (Clark, 1998, p. 27)

Twente's approach was to build "from core competencies," that is to develop new units on the basis of existing programs. The faculties and departments were encouraged to innovate in developing interdisciplinary programs. Such efforts were "praised as internal entrepreneurship" (Clark, 1998, p. 53). To avoid being a purely technological hub, Twente vacillated various disciplines to create unique combinations: for example, combined programs in civil engineering and management, computer science and management, and "communication," which brought together education, philosophy, public policy and administration. Twente considered it essential not to marginalize the social sciences and humanities, which are less likely to engage in entrepreneurship. Clark (1998) remarks that "a strong capacity to "top-slice and cross-subsidize" becomes a must regardless of complaints from "bread-winners" who bring the majority of extra revenue to the university. "Entrepreneurship, then, is not a management posture that serves only new ventures in science and technology; it operates throughout the university" (p. 21).

Chalmers sent a strong symbolic message to its academic heartland by establishing a new chair in "Innovative Engineering" and giving it to an internationally renowned electronics scientist and inventor with strong work experience in a U.S.-based corporation. As stressed later in interviews with leaders of that period "he had an impact on everybody at the university." Here was a respected professor changing his field to highlight innovation. In 1979, he started up the Chalmers Innovation Centre (CIC) — a critical step in building a developmental periphery — as a bit of infrastructure that would systematically advance "the transfer of new product ideas and new technology from university to industry." Furthermore, special undergraduate courses were developed around the theme of "Innovation in Practice," and a brief graduate course on patenting was offered to undergraduates and to the public (Clark, 1998, pp. 88–89).

In Finland, where the government had a specific requirement for each faculty member to work for 1600 hours during the academic year, Joensuu introduced a "flexible work load" that gave departments more power to negotiate with faculties and research centres on:

> allocation of their time between four major tasks of education, research, public services, and other responsibilities. They could change the mix from year to year, particularly to favor more research in one year (or part of a year) and more teaching in another. (Clark, 1998, p. 112)

In each of the model situations, the balance of power between departments and the reporting research centres was built on developing trust which led to the diffusion of values from the entrepreneurial units to their more traditional counterparts.

An integrated entrepreneurial culture

Morris and Jones (1999) note that the entrepreneurial process has attitudinal and behavioral components. In terms of attitude, there needs to be a willingness on the part of an individual or organization to embrace new opportunities and take responsibility for effecting creative change (Miller & Friesen, 1983). As far as behaviour is concerned, the process includes a set of activities required to (a) identify and evaluate an opportunity, (b) define a business concept,(c) identify the needed resources, (d) acquire the necessary resources, and (e) implement, operate, and harvest the venture (Stevenson et al., 1989).

Moving away from traditional modes of teaching and research to problem-solving ones to a large extent determines the beginning of attitudinal change at a university. (Gibbons et al., 1994; Scott, 1997; Ziman, 1994 as reported in Clark, 1998). Davies (2001) states that:

> the entrepreneurial culture will tend to be marked by the ability to handle internal comparisons and

> competitiveness transparently; a collective ability to admit to weaknesses and act accordingly; a preparedness to confront problems, and a readiness to be accountable, academically and financially. (p. 27)
>
> Enterprising universities, much as firms in the high tech industry, develop a work culture that embraces change. That new culture may start out as a relatively simple institutional idea about change that later becomes elaborated into a set of beliefs that, if diffused in the heartland, become a university-wide culture. Strong cultures are rooted in strong practices. As ideas and practices interact, the cultural or symbolic side of the university becomes particularly important in cultivating institutional identity and distinctive reputation. (Clark, 1998, p. 7)

Warwick, for example, learned that "the creation of a positive organizational culture is a lengthy process which cannot be achieved overnight," but once it succeeded, the university received "a momentum" that [carried] it through difficult decisions and troubling times" (Shattock, 1989 in Clark, 1998, p. 38).

In Strathclyde's case, faculty were motivated by the idea of becoming a useful university. Strathclyde administration intrigued its faculty by the pursuit of "the Strathclyde Phenomenon," which would out-compete "The Cambridge Phenomenon" (the success of the Cambridge Science Park) (Clark, 1998).

> The 'phenomenon'went beyond specific linking structures: it is mostly about attitudes. It is about the attitude of academic staff willing to engage in an additional stratum of research activity which imposes considerable business disciplines, required multi-disciplinary teamwork across traditional department and faculty boundaries, and accepts a market-pull component of their research planning. It is also about the attitude of the university in being willing to support such initiatives and to invest in the management costs necessary to bring them abou.t (p. 80)

In order for ideas to circulate beyond the originating research centres, universities may encourage an interdivisional and inter-institutional exchange of ideas between entrepreneurs. A university may establish exchange floors similar to the MIT Media Lab or Twente's Entrepreneurship House to allow entrepreneurs to meet their colleagues, venture capitalists, and government officials. Entrepreneurs might use this opportunity to promote their innovative ideas and seek financial support. Informal linkages usually lead "to formal linkages and many useful exchanges of research materials or access to equipment" (Wolfe & Lucas, 2001). An informal and transparent dialogue is proven to increase the exchange of information, and the development of ideas (Clark, 1998, p. 110). Firms participating in such a dialogue benefit by opening the university's "tacit knowledge" which often has an influence on the effectiveness of the knowledge transfer process (Wolfe & Lucas, 2001).

To permanently instill an entrepreneurial culture, a university must pay special attention to its "recruitment and induction programs" as well as criteria for "advancement and promotion" (McInnis, 2001, p. 54). The university needs to establish systems that reward leaders who fuel the imagination and success of their departments and foster an entrepreneurial spirit (Munroe-Blum, et al., 1999). In entrepreneurial cultures, faculty receive "rewards and recognition for creative ideas." They perceive the work as "challenging and important," interesting and exciting (McInnis, 2001, p. 48).

> An institutional *idea* that makes headway in a university has to spread among many participants and link up with other ideas. As the related ideas become expressed in numerous structures and processes, and thereby endure, we may see them as institutional *beliefs* that stress distinctive ways. Successful entrepreneurial beliefs, stressing a will to change, can in time spread to embrace much and even all of an institution, becoming a new *culture*. What may have started out as a simple or naïve idea becomes a self-asserting shared view of the world offering a unifying *identity*. Atransformed culture that contains a sense of historical struggle can in time even become a *saga*, an embellished story of successful accomplishment. Our five universities have moved along this ideational road. (Clark, 1998, p. 143)

Interdependence between all five components

The strengthened steering core, the diversified funding base, the expanded developmental periphery, the stimulated academic heartland and the integrated entrepreneurial culture as presented above can be seen as independent elements of equal importance. To be successful, the entrepreneurial strategy needs to have them highly interdependent and integrated. A loosening of standards or lack of results in one area can easily affect the other four.

For example, Warwick's "earned income policy" would not be successful were it not for an equal emphasis on the systemized and administered yearly "gathering of funds;" some risky funding of new units; and the adoption of new behaviors by the departments (Clark, 1998, p. 17).

"A university that has partially transformed itself to be more enterprising might largely exist in a schizophrenic state, entrepreneurial on one side and traditional on the other" (Clark, 1998). For example, possessing an expanded developmental periphery but lacking an adequate steering core and entrepreneurial culture, a university, in particular its professional staff will be paralyzed by faculty resistance "to commercialization and to practices that [are] thought [to foster] commercialization, such as keeping time sheets" (Slaughter & Leslie, 1997, p. 161). The professional staff will be seen as manipulating faculty "to bring them closer to commercial culture" (p. 161). If the entrepreneurial efforts meet cultural resistance and the university finds it difficult to establish corporate identity results, provided all other elements work, the university will have to deal with "anarchical behavior of the diverse units outside the borders of the well-defined and bureaucratically articulated core of the university" (Mora & Villarreal, 2001, p. 64). Consequently, poor coordination and correspondence between the five strategic components may preclude success in the transition from traditional to entrepreneurial universities. (Mora & Villarreal, 2001).

The Intricacies of the Entrepreneurial Narrative

As Clark (2001) puts it, it is important to build "an entrepreneurial narrative — an affirming, convincing story that depicts to university patrons and the general public what modern progressive universities are like as they combine new and old practices in a revised, up-to-date form of organization" (p. 21).

Universities continue to explore potential areas of innovation and produce their own mistakes and success stories. Clark's success stories demonstrate how disadvantaged universities break through the obstacles and achieve a winning position, as a result receiving national and international recognition. Twente and Warwick not only received a high national evaluation rating but enhanced their visibility globally, increased their interaction with communities and groups in developing countries thereby attracting growing numbers of international students, thus augmenting their revenue bases. Strathclyde, struggling with the image of "the ugliest university" in the U.K. in the early 1980s, has become a leading institution of innovative practices in Scotland and the U.K. and has shared its experiences with counterparts across Europe (Clark, 1998). These examples appear to confirm the words of Charles Darwin, highlighted by Salmi (2001), that "it is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change."

Slaughter and Leslie (1997) point out that entrepreneurial universities enhance their stature "in the eyes of client groups, government ministries, and the community," diversify and strengthen revenue generation, all of which has positive spillover effects on research and teaching. Students, engaged in entrepreneurial projects, are reported to benefit from new

knowledge and skills, which they would not likely receive at a traditional university and which improve their employability.

Clark (1998, p. 55) points out that as a result of the entrepreneurial response, the public university is becoming:

- a "responsible university:" a place committed to the economic and cultural development of its region;
- a "university without frontiers:" a place working hard to strengthen its international character, through international research institutes and promotion of international student mobility;
- a "focused university:" a place that aims for an appropriate depth of coverage in a limited number of fields across their full range;
- a "flexible university:": a place that achieves uncommon versatility through ongoing reform of its governance, strengthened channels of accountability, internal redeployment of personnel, and especially, creative use of resources, where "the incomes resulting from contract funding are sources of independent means which can be spent freely."

However, the entrepreneurial remedy can also cause side effects. The following are some reservations and concerns that accompany the development of entrepreneurial universities at the level of the national system, the institution and the individual entrepreneur.

Environmental dependence

"National and local conditions variously constrain...the entrepreneurial response." Enterprising universities may still encounter "close governmental regulation and sector standardization" (Clark, 1998, p. 103). In countries where national goals promote "distributive fairness" and "equivalent quality," governments may seek to regain their control through legislative restrictions and complicated reporting mechanisms.

Clark (2001) warns that:

> self-reliant universities can move toward virtuous circles of income generation, replacing the vicious circles of decline in unit-cost support – provided that the government at least has the good sense not to take away yearly surpluses and punish universities for any financial success they achieve. (p. 14)

However, as Slaughter and Leslie (1997) indicate, the cause and effect for national policy changes and entrepreneurial responses are circular —"the success of academics in raising alternative revenues not only reduces pressures on government to remedy past funding deficiencies but encourages additional state subsidy reductions" (p. 74).

According to Wolfe and Lucas (2001), "many policymakers view universities as largely untapped reservoirs of new knowledge waiting to be taken by firms and applied" (p. 174). With governments encouraging universities to become "knowledge factories," businesses may increase their expectations for a rapid return on investment in the technology transfer process. However, firms should be aware that "the mere proliferation" of technology transfer from universities to firms "should not be equaled with an increase in effectiveness or efficiency" (p. 174).

Clark (2001) cautions that neither state nor market should be emphasized in the process of change. What should be stressed instead is:

> professional coordination by faculty and administrators, who operate with their own norms of responsibility and accountability. As a fleshed-out normative community, the entrepreneurial university becomes an organizational version of civic society, one that mediates between state and market rather than be dominated by either. (p. 23)

Institutional character

Slaughter and Leslie (1997) remark that research centres which tend to behave like small firms may reshape the nature of their universities, "often in ways not particularly related to the educational process" (p. 159). Working with industry, universities "must not be industry," as

MIT President Vest warns — "unless universities retain their culture, base of fundamental research, and educational mission, they will not have value to bring to the partnership" (Munroe-Blum et al., 1999, p. 54).

> In evermore turbulent settings, universities can become robust as they develop problem-solving capabilities built around a flexible focus. But to do so they must become uncommonly mindful of their characterological development. Facing complexity and uncertainty, they will have to assert themselves in new ways at the environment-university interface. But they will still have to be universities, dominated as ever by educational values rooted in the activities of research, teaching and study. (Clark, 1998, p. 129)

The university character may determine to a large extent the direction and profundity of change. According to Clark (1998):

> specialized universities are better positioned than the comprehensive institutions to control demand around their subject specialization and, with a more integrated character to pursue an entrepreneurial response. (p. 135)

For example, in Twente and Joensuu, very much like at their private counterpart — MIT, social scientists proved to be more creative and willing to adapt their research to the dominating "engineering modes of thought" that usually infuse a more structured, disciplined, results-based and purpose-oriented environment (Bacow, 2002; Clark, 1998). The ability to focus on something which a particular university can do better than others, may also be easier to do for smaller institutions. The Joensuu's case-study shows that:

> forestry has become a major focus to the point where social scientists concerned about the relatively weak position of their disciplines even look to the possibility of becoming linked to it through environmental studies, economic analysis, and social policy. (Clark, 1998, p. 118)

This cohesion would be comparatively more difficult to achieve at the classical Oxbridge type institutions which see entrepreneurship of the Joensuu type as a threat to their academic integrity.

Large traditional universities are often overburdened by historical traditions and institutional memory which usually makes them slide along the "professorial" — "participatory" — "managerial" scale, practically accomplishing nothing while "all three phases [continue] to exist in the current framework, adding to complexity and muddling institutional character" (Clark, 1998, p. 58).

Universities may perceive entrepreneurship and innovation as fads, most of which fail and are usually of a transient character (Birnbaum, 2000). As Clark (2001) warns this should not be seen as a quick fix solution:

> the creation of an entrepreneurial university is not a stage that can be passed through once and forever. It is a process without end. Its creation is likely to happen not as a big bang, but in an incremental, evolutionary fashion, as a flexible organizational character that can adjust and readjust with better responses to rapidly changing demands. (p. 17)

Faculty motivation

Clark (1998) observes that the public conception of successful change often overemphasizes the role of a "Great Person with a Large Idea" (p. 143).

> A modern derivative of this view depicts a chief executive officer or management team formulating at the outset a global strategic plan. Idea becomes purpose, a mission statement soon follows, and all else becomes means to a pre-chosen end. But the reality of change in complex organizations, especially in universities, is different. (p. 143)

Without facilitative leadership, which encourages the ownership of change to reside with faculty members, the entrepreneurial response cannot be sustainable.

Universities may loose control over their faculty members, as faculty members increase their marketability and are given more external consulting opportunities. Faculty time will decrease and create conflicting demands for research vs. teaching vs. service. University leadership can play a role in promoting the high status and prestige of entrepreneurial

efforts that are based within the university structure and not beyond or without it.

> Faculty are willing to invest a great deal of professional energy in winning financial awards so long as the resources secured allow them to maintain or even enhance their place in the status and prestige system and permit some degree of discretionary spending. Faculty are quite willing to compete for commercial moneys if these resources do not conflict directly with traditional status and prestige hierarchies and compensate with symbolic rewards such as media association of science and technology with national economic competitiveness. (Slaughter & Leslie, 1997, p. 18)

Entrepreneurial universities will have to seriously reconsider the issue of performance evaluation. On the one hand, universities:

> should be realistic and willing to be judged on the facts. This means systematically developing evaluation procedures, not only for projects but also for policies, initiatives and performance, and the findings should subsequently be taken on board. (Daumar, 2001, p. 73)

To foster a healthy entrepreneurial attitude, universities need to develop performance measures that are "meaningful, ambitious but achievable" (Munroe-Blum et al., 1999). Faculties need to select "the best standards" and establish:

> a long-term commitment to promoting public engagement and understanding through public reporting... The use of performance measures is an ongoing and continuous process and should emphasize outcomes rather than activities. (p. 56)

On the other hand, a pure results-based management approach, as it is practiced by some businesses, will not work. First of all, as Martin and Austen (2002) note, "in an innovation-driven organization, stable and measurable goals may be scarce: current goals are likely to be shifting and new goals will be constantly emerging" (p. 9). Secondly, not all inventions become commercially viable; "many inventions can take years to generate income" and "hits are greatly outnumbered by misses," according to Clark (1998). "The business innovation literature suggests that only one start-up company in ten is successful" (Slaughter & Leslie, 1997, p. 202). Consequently, university faculty may see attempts to evaluate innovation on the basis of typical business criteria as a substantial risk. "These risks are several: business failure, product liability, failure to meet societal expectations of economic improvement and job creation, and above all, neglect of students" (p. 202).

Referring to the nature of academic entrepreneurship, Slaughter and Leslie (1997) write that "in many regards academic capitalists are state-subsidized entrepreneurs, cushioned from the market by their salaries and institutional resources" (p. 203). In the case of recurring failures, environmental or institutional pressures, the academic entrepreneurs may terminate their innovative commitment to their universities. McInnis (2001) argues that while:

> it is true that entrepreneurs in any environment are likely to lose their creative approach to problem solving when their sense of self-determination is threatened, it is doubly true of academics, for whom autonomy is synonymous with their professional and personal identity. (p. 54)

Conclusion

Under increasingly growing external and internal pressures, public universities seek for new administrative forms and strategies to motivate its academic heartland to acquire the entrepreneurial culture that stimulates innovation, self-reliance, and pursuit of discretionary funds. Usually, university transformation "means a great deal of hard work, with uncertain outcomes, and especially with the hard work extending indefinitely into the future"(Clark, 2001, p. 18). This hard work, as Slaughter and Leslie (1997) note, entails:

> substantive organizational change and associated changes in internal resource allocations (reduction or closure of departments, expansion or creation of other departments, establishment of interdisciplinary units); substantive change in the division of academic labor with regard to research and teaching; the establishment of new organizational forms (such as arm's-length companies and research

> parks); and the organization of new administrative structures or the streamlining or redesign of old ones. (p. 11)

The transformation process may turn out to be very challenging and attenuated. However, "like democracy, university entrepreneurship can be unattractive until [one considers] the alternatives. Doing nothing poses very large risks" (Clark, 2001, p. 18).

The entire process of transformation is an immense field of creativity and opportunities, with prevalent confusing and unpredictable moments. However, as Salmi (2001) claims:

> what is certain is that the hegemony of traditional universities has been definitively challenged and that institutional differentiation is bound to accelerate, resulting in a greater variety of organizational configurations and patterns, with the emergence of a myriad of alliances, linkages and partnerships within tertiary institutions, across institutions, and even reaching beyond the higher education sector. (p. 123)

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